

LISTING OF CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) An apparatus for optically generating signals, the apparatus comprising:

(a) a mode-locked semiconductor laser that generates mode-locked optical radiation with emitted wavelengths separated by approximately 10 GHz to approximately 300 GHz;

(b) an optical demultiplexer with a demultiplexer input, a first demultiplexer output, and a second demultiplexer output, the demultiplexer input being coupled to said mode-locked semiconductor laser, wherein said optical demultiplexer serves as a wavelength separator capable of selecting a first wavelength for said first demultiplexer output and a second wavelength for said second demultiplexer output;

(c) an optical modulator having a modulator input and a modulator output, the modulator input being coupled to the first demultiplexer output; and

(d) an optical multiplexer having a first multiplexer input, a second multiplexer input, and a multiplexer output, the first multiplexer input being coupled to the modulator output, the second multiplexer input being directly coupled to said second demultiplexer output.

2. (Original) The apparatus of claim 1, wherein the mode-locked semiconductor laser is a semiconductor racetrack laser.

3. (Original) The apparatus of claim 1, wherein the optical modulator is a Mach-Zehnder modulator.

4. (Original) The apparatus of claim 1, further including processing electronics coupled to the optical multiplexer output, the processing electronics containing

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